

REMARKS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested. Claims 1 and 17 are amended without prejudice or disclaimer.

Response to Arguments

Applicants appreciate the Examiner's detailed analysis in order to identify our respective positions with regards to the teachings of Arai et al. Applicants note that the Office Action on page 3, second paragraph, argues that Applicants still fail "to treat the prior art teachings as a whole, because the Applicant's arguments show that that the Applicant(s) treated the cited references of the prior art (Arai) for the rejection as separate and unrelated pieces." Applicants question why this assertion even matters. For example, we have argued what Arai et al. teach or don't teach with regards to generating call types in general. It appears that the Examiner believes that Applicants treat one portion of Arai et al. as one part of prior art and another portion of Arai et al. as another piece of prior art and somehow argue that these two separate pieces cannot be legally combined. Applicants do not consider different columns or figures or portions of Arai et al. as "unrelated pieces" and do not believe we have treated them in such a manner. Applicants respectfully submit that this is a somewhat confusing position to maintain.

Having reviewed the response to arguments in the outstanding Office Action, Applicants believe that the Examiner's fundamental position is that the spoken language understanding system "necessarily and/or inherently involves two phases of operations." The first phase is a training operation for training models that includes "generating or clustering models, in this case, including call type models/classes" and a testing operation. Office Action, page 4. It is the position in the Office Action that the clustering generation subsystem 1110 of Figure 9, in which grammar fragments are clustered, somehow inherently also teaches generating call types. As

noted on page 5 of the Office Action, Applicants have explained in numerous cases the algorithms and teachings of Arai et al. and how they do not teach “generating call types” but use existing call types. Page 5 of the Office Action asserts that our arguments are contradictory “because basic goal [sic] (inherent feature) of training operation [sic] is to generate models/clusters/classes (i.e., in this case, generating grammar fragments including call types)....” Applicants submit that relying on an inherency argument is unpersuasive in the present case as shall be explained next. Applicants submit that a simple explanation of the process of Arai et al. shall further strengthen and clarify our position.

First, we note that the example discussed in Arai et al. relates to a calling card based system. In this case, users can telephone the spoken dialog system and user their calling card to perform certain functions. The particular call types that may be used are bounded and identified in advance. For example, the user may want to use their calling card to make a call thus the call-type is “calling_card”. The user may want to have the system dial a number for them in which the call type is a “dial_for_me”. The user may want to ask for a billing credit in which case the call type is a “billing_credit”. All of these call types are identified in Figure 2. What actually happens in practice is that a user has a transcription of a series of telephone calls and the user (the person implementing the system) assigns these known call types to phrases in the transcriptions. This is clearly set out in column 4, lines 6-18. Here, Figure 2 is discussed for the fragment “calling card”. They explain that “the call-type calling card was associated with the fragment 886 times, which is a comparatively high frequency among the call-types....The call-type probability distribution for each fragment is also obtained by counting call-types assigned to transcriptions in which the fragment is observed. This call-type probability distribution represents a semantic feature vector for a fragment.”

In other words, the training transcriptions already have call types assigned to each fragment. What is shown in Figure 2, is merely the semantic association of the phrase “calling card” with the various assigned call types for the transcription. Figure 2 shows the calling_card was associated with a fragment 886 times. The call-type billing_credit was associated with the fragment 15 times, and so on. Therefore, according to the teachings of Arai et al., the grammar fragment acquisition using syntactic and semantic clustering involves clustering the various phrases within the training transcription according to the already assigned call types from the transcription. Applicants submit that there is no contradiction in our arguments in that the process that is involved in the teachings of Arai et al. presume and require the existence of the call types because those call types need to be already assigned. Therefore, Applicants submit two basic points: first, our arguments are persuasive that the cluster generating subsystem 1110 simply does not teach generating a call type; second, Applicants submit that it is simply not an inherent feature of this training operation to generate call types inasmuch as the call types have already been assigned to the phrases in the training transcriptions.

Applicants furthermore submit that when the understanding of the differences between the training transcriptions and the assigned call types is properly understood, that the fundamental position in the Office Action becomes less persuasive. For example, in numerous places on pages 4 and 5 of the Office Action it states that the clustering involves “generating grammar fragments including call types”. Applicants respectfully submit that this interpretation is incorrect for two reasons. First, Applicants note that the cluster generating subsystem does not even “generate” grammar fragments. Applicants again submit that the fragments already exist in the training transcription but the cluster generating subsystem merely groups (or “clusters”) these grammar fragments according to the analysis that is performed with regards to the syntactic and semantic association. Accordingly, there is simply no generation of grammar fragments.

Additionally, and more important to the present claim set, the grammar fragments do not “include call types.” Applicants note that the analysis in the Office Action seems to assume that there are numerous grammar fragments (such as “on my”, “calling card”, “number is”, “call please”...) and that these grammar fragments somehow “include call types.” Applicants respectfully submit that it almost appears as though the Office Action does not understand the differences between the call types and the grammar fragments.

In order to clarify this possible misunderstanding, Applicants again return to Figure 2 and note that the grammar fragments are the phrases in the top half of this figure. These are the actual fragments that are within the training transcriptions. Separate from these grammar fragments are the assigned call types that were discussed in column 4. These are call types are the tasks (column 3, line 56) that correspond to or are assigned to the particular fragment. This is the object or desire of the user that is represented by the grammar fragment. The grammar fragments themselves do not “include call types” but rather have call types assigned to them. Therefore, the user may say something like “I would like to use my card to make a call.” Such a phrase would be in the training transcription. The professional would assign a call type of “calling_card” to this phrase. As can be seen, this does not mean that the word “calling_card” is within or included in the phrase but rather it is the assigned call type to that phrase.

In sum, Applicants respectfully submit that the analysis in the Office Action is incorrect by concluding that a training operation for training a spoken language understanding system necessarily or inherently involves a step of generating call types. Applicants submit that the training operation taught in Arai et al. expressly utilizes pre-existing and assigned call types from transcription data. The cluster generating subsystem 1110 clusters grammar fragments, not call types. Accordingly, Applicants maintain that our analysis is more persuasive and more technically correct with regards to the teachings of Arai et al. and the use of call types.

Rejection of Claims 1-3, 5-6, 8 and 17-20 Under 35 U.S.C. §101

The Office Action rejects claims 1-3, 5-6, 8 and 17-20 under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Applicants have amended the independent claims as necessary in order to address this 35 U.S.C. §101 issue. Accordingly, Applicants respectfully submit that the claims now are positively tied to another statutory category and are directed to statutory subject matter.

Rejection of Claims 1-3, 5-6, 8-11, 13-14 and 16-22 Under 35 U.S.C. §103(a)

The Office Action rejects claims 1-3, 5-6, 8-11, 13-14 and 16-22 under 35 U.S.C. §103(a) as being unpatentable over Arai et al. (U.S. Patent No. 6,173,261) (“Arai et al.”) in view of Attwater et al. (U.S. Patent No. 6,839,671) (“Attwater et al.”). Applicants have addressed in detail the arguments set forth above and respectfully submit that the references even if combined fail to teach each limitation of the claims.

Rejection of Claims 4 and 7 Under 35 U.S.C. §103(a)

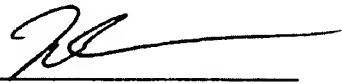
The Office Action rejects claims 4 and 7 under 35 U.S.C. §103(a) as being unpatentable over Arai et al. in view of Attwater et al. and Maes et al. (U.S. Patent Publication No. 2003/0088421) (“Maes et al.”). Applicants submit that inasmuch as these claims depend from a patentable parent claim, Applicants respectfully submit that these claims are patentable as well.

CONCLUSION

Having addressed all rejections and objections, Applicants respectfully submit that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited. If necessary, the Commissioner for Patents is authorized to charge or credit the Novak, Druce & Quigg, LLP, Account No. 14-1437 for any deficiency or overpayment.

Respectfully submitted,

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By: 

Correspondence Address:

Thomas A. Restaino
Reg. No. 33,444
AT&T Corp.
Room 2A-207
One AT&T Way
Bedminster, NJ 07921

Thomas M. Isaacson

Attorney for Applicants
Reg. No. 44,166
Phone: 410-286-9405
Fax No.: 410-510-1433